

## Abstract

An object of the present invention is to provide a technology that enables to determine the cetane number of fuel in a state in which it is actually used for running an internal combustion engine with an improved degree of accuracy. A fuel injection for cetane number determination in which a specified quantity of fuel is injected into a combustion chamber during a compression stroke or expansion stroke, is performed while the internal combustion engine is in a fuel cut state. The cetane number of the fuel is determined based on the time period from a specified time to a time of ignition at which the fuel injected by the fuel injection for cetane number determination is ignited.